

# Ohio River Basin River and Reservoir Impacts

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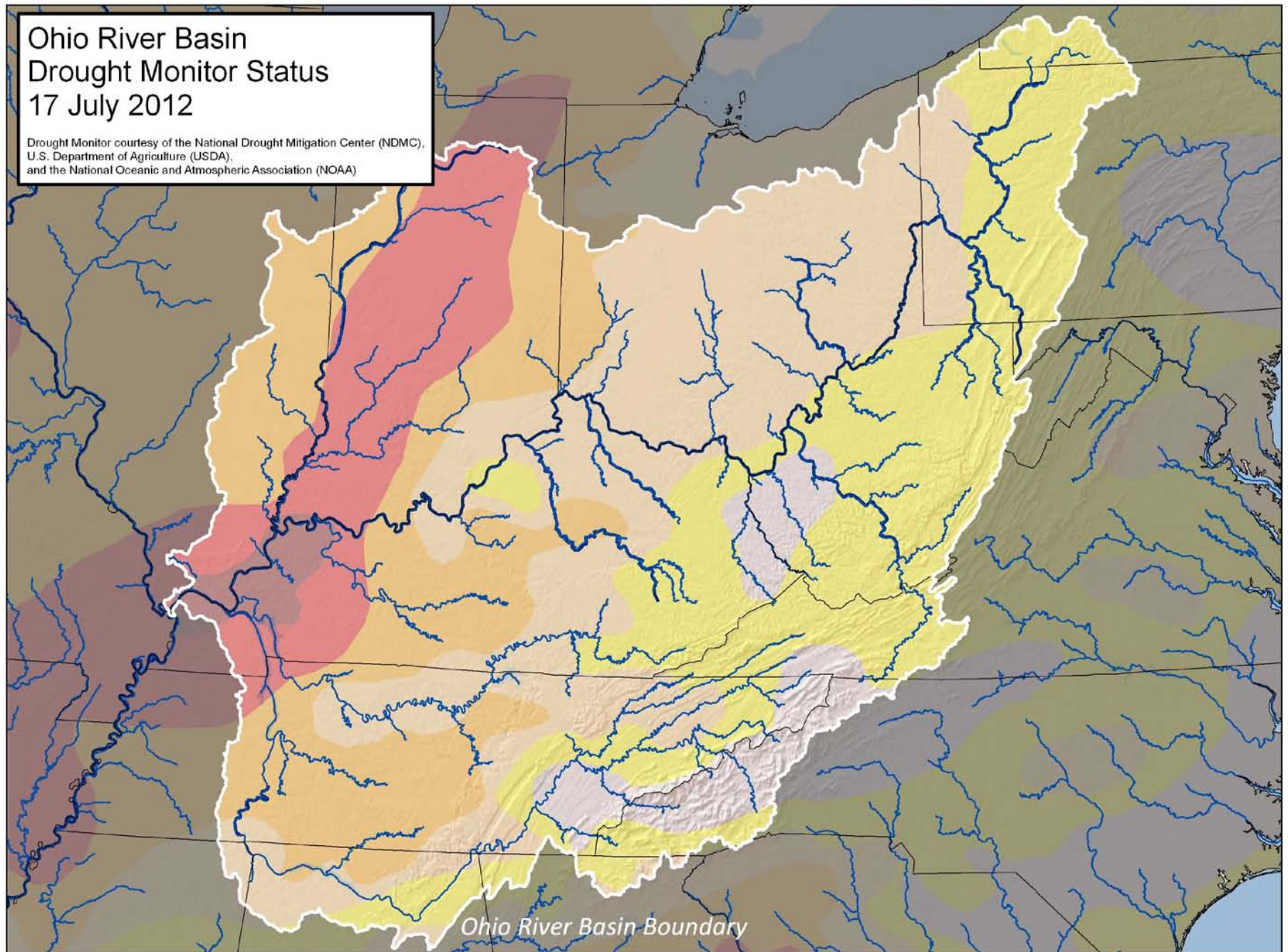


US Army Corps of Engineers  
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# Ohio River Basin Drought Monitor Status 17 July 2012

Drought Monitor courtesy of the National Drought Mitigation Center (NDMC),  
U.S. Department of Agriculture (USDA),  
and the National Oceanic and Atmospheric Association (NOAA)

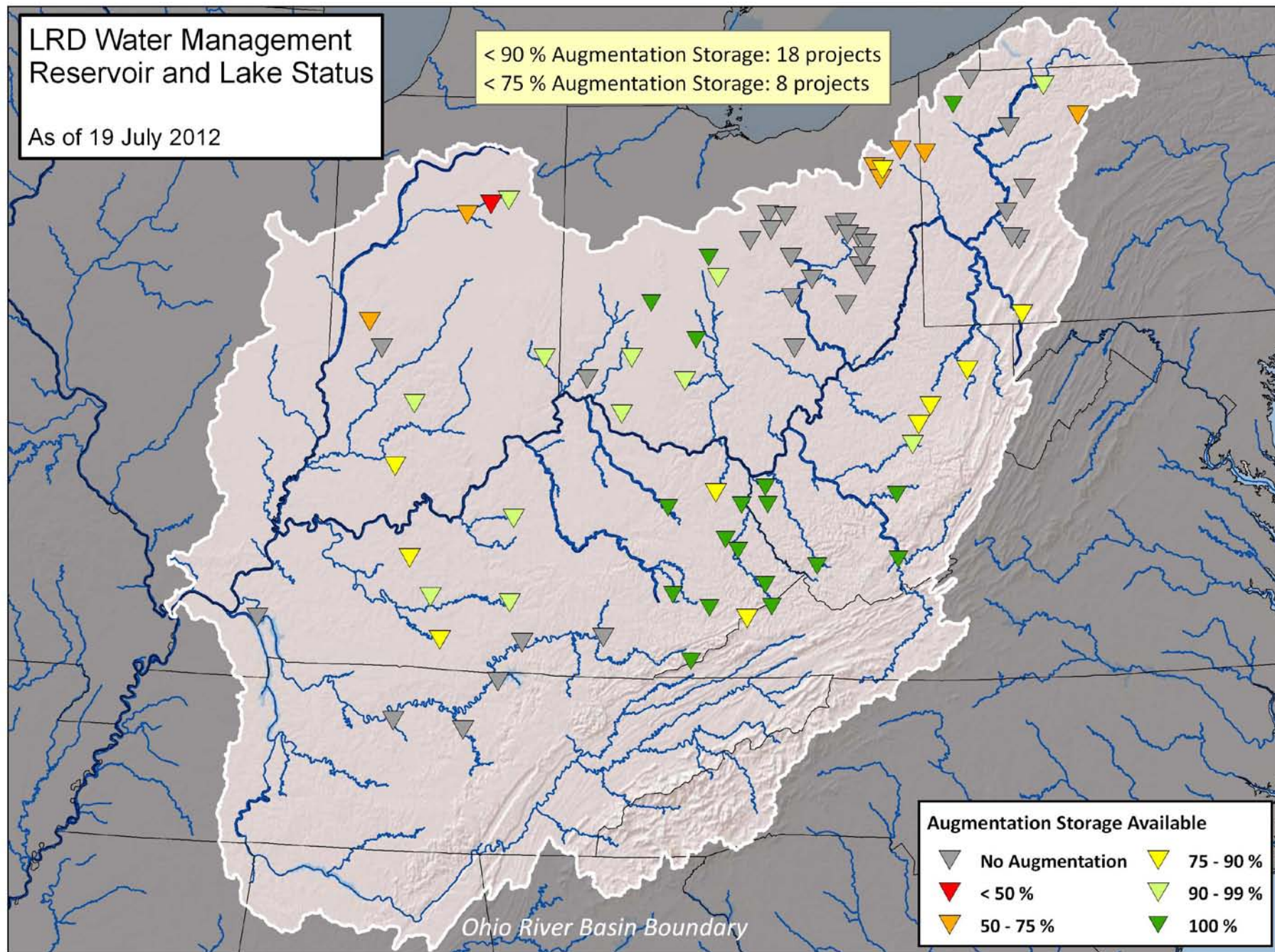




# LRD Water Management Reservoir and Lake Status

As of 19 July 2012

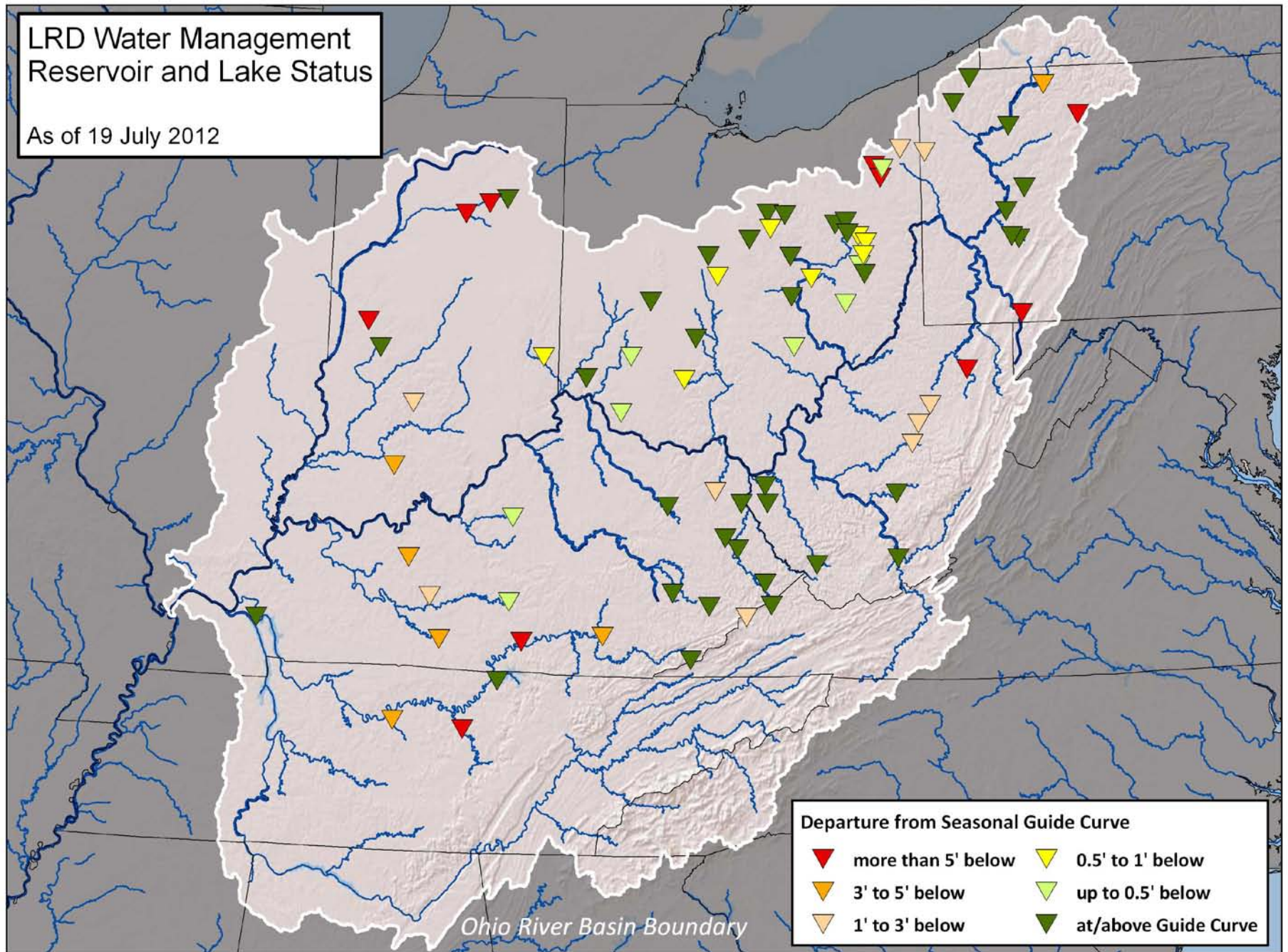
< 90 % Augmentation Storage: 18 projects  
< 75 % Augmentation Storage: 8 projects





# LRD Water Management Reservoir and Lake Status

As of 19 July 2012



# Water Quality Impacts

- Lakes

- ▶ Longer reservoir retention times
- ▶ Intensified stratification
  - Warmer surface water temperatures
  - Decreased water quality in lower depths (depleted oxygen levels, often at depths below 10ft)
  - Selective withdrawal structures lessens impacts at projects where these structures are in place.
- ▶ Fish kills become more likely
- ▶ Impacts to recreation (low water levels; water quality; algae)
- ▶ Increased biological productivity
  - Harmful Algae Blooms





# LRD Water Management Reservoir and Lake HAB Status

Pet deaths  
reported

Salamonie

Cecil M. Harden

C.J. Brown

Dillon

Deer Creek

Paint Creek

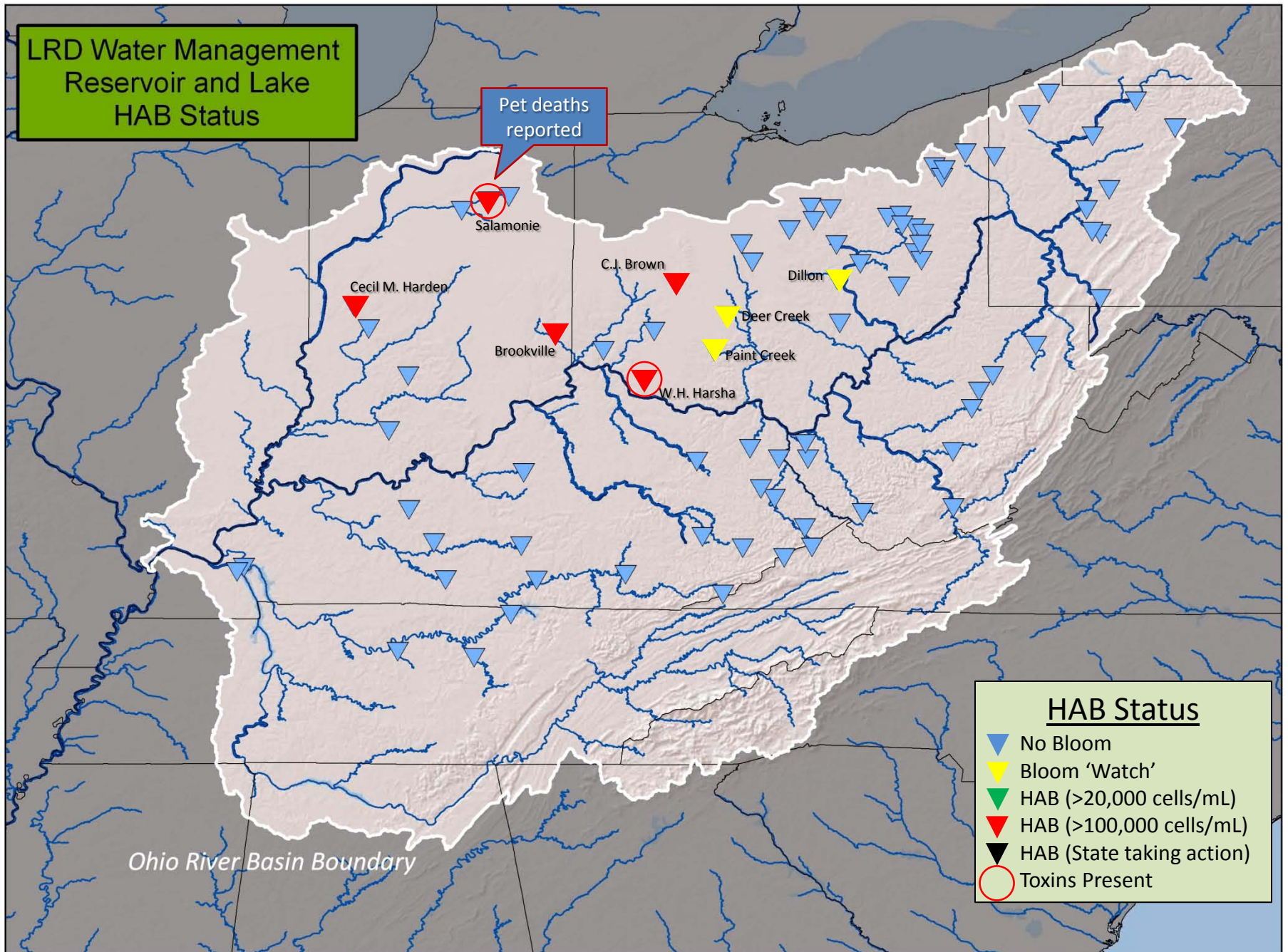
Brookville

W.H. Harsha

Ohio River Basin Boundary

## HAB Status

- Blue triangle: No Bloom
- Yellow triangle: Bloom 'Watch'
- Green triangle: HAB (>20,000 cells/mL)
- Red triangle: HAB (>100,000 cells/mL)
- Black triangle: HAB (State taking action)
- Red circle: Toxins Present



# Water Quality Impacts

- Harmful Algae Blooms
  - ▶ Blue green algae (cyanobacteria)
  - ▶ Naturally occurring
  - ▶ Rapid growth or blooms due to many contributing factors
  - ▶ Can produce harmful toxins that can lead to animal deaths and human illness
  - ▶ LRD taking action; Districts are developing HAB response plans which...
    - Establish thresholds for advising/informing the public
    - Describe internal and external communication strategies
  - ▶ Water supply impacts due to treatment challenges related to algae



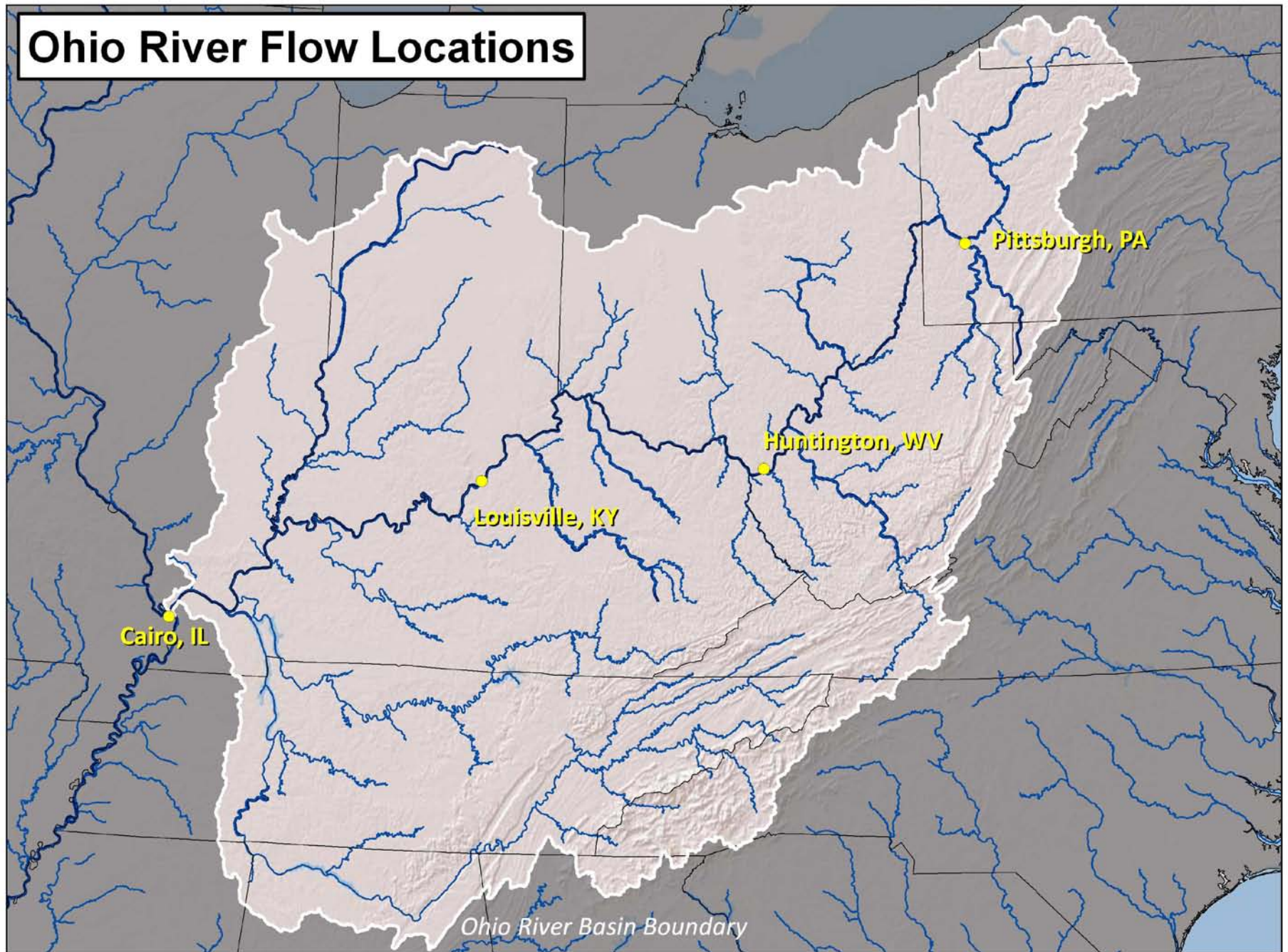
# Water Quality Impacts

- Downstream River and Stream Reaches
  - ▶ Outflow water temperatures are warmer than normal
    - Impacts to coldwater fisheries and possible impacts to aquatic life further downstream
  - ▶ Decreased dilution capacity
    - Instream pollution loads remain the same
      - ▷ Ex: Total Dissolved Solids (TDS)

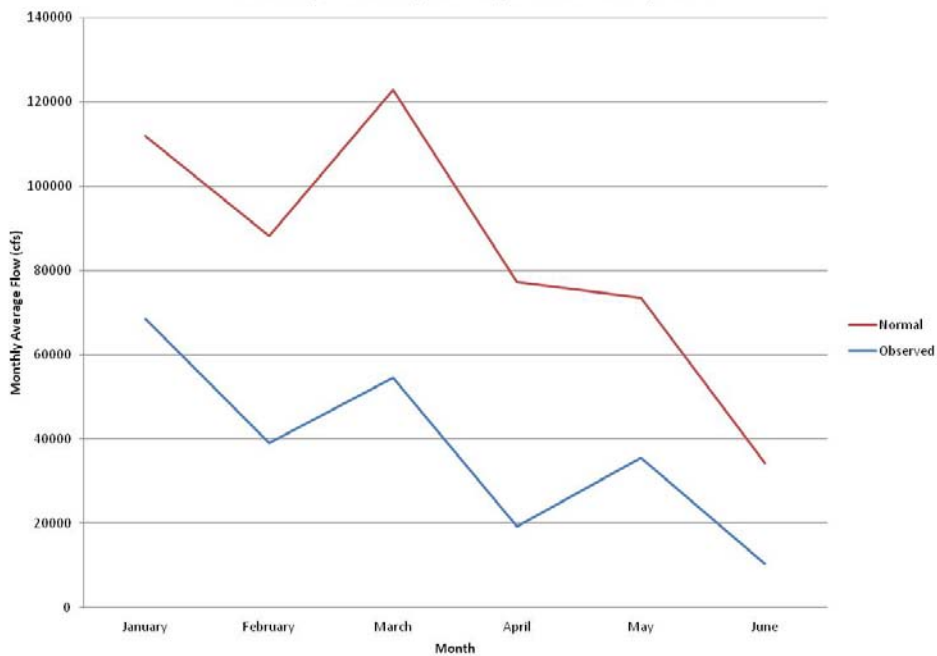




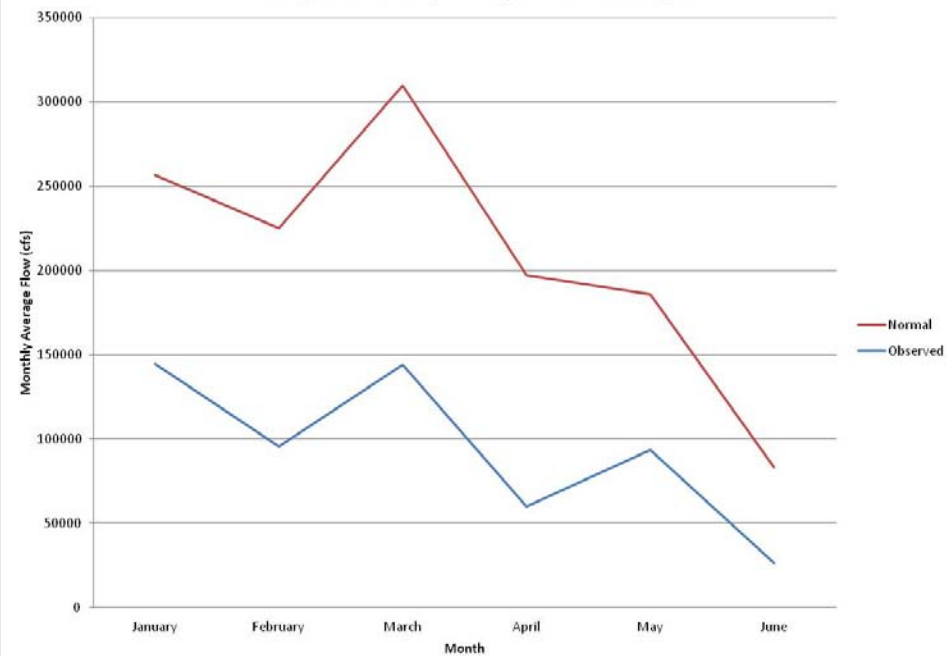
# Ohio River Flow Locations



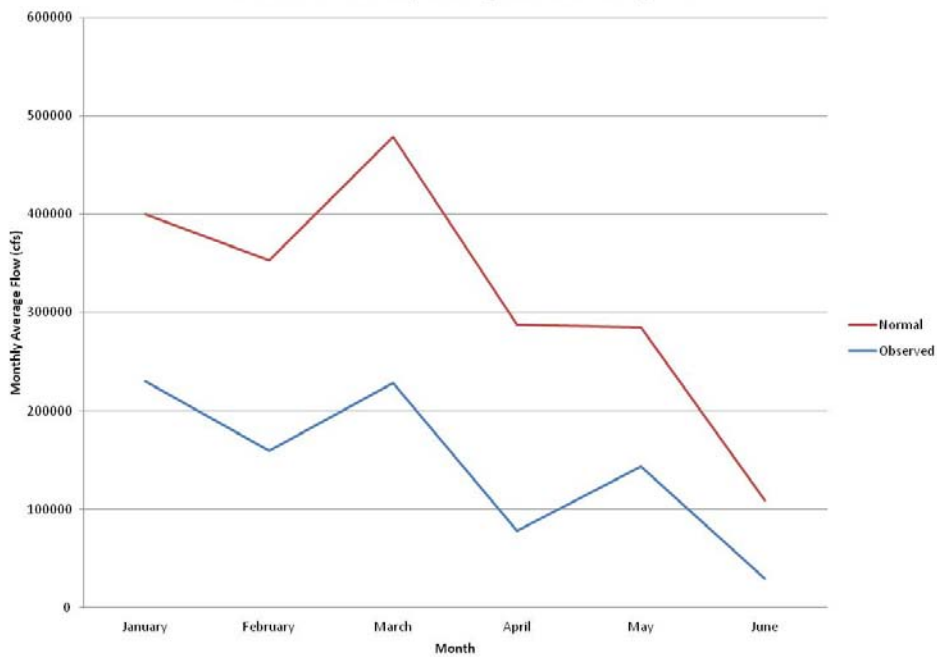
Pittsburgh Monthly Average Flows during 2012



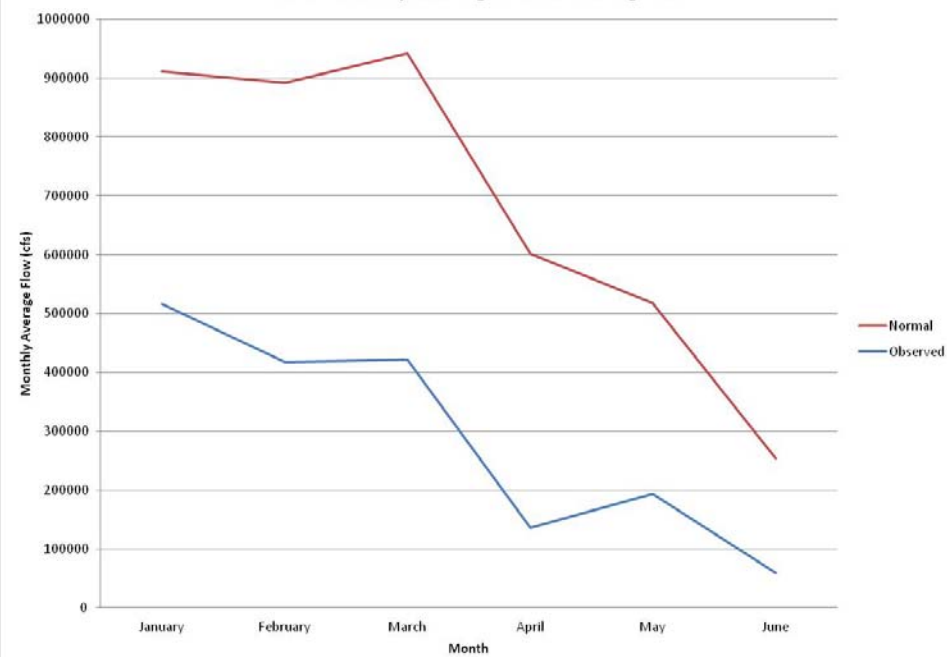
Huntington Monthly Average Flows during 2012



Louisville Monthly Average Flows during 2012

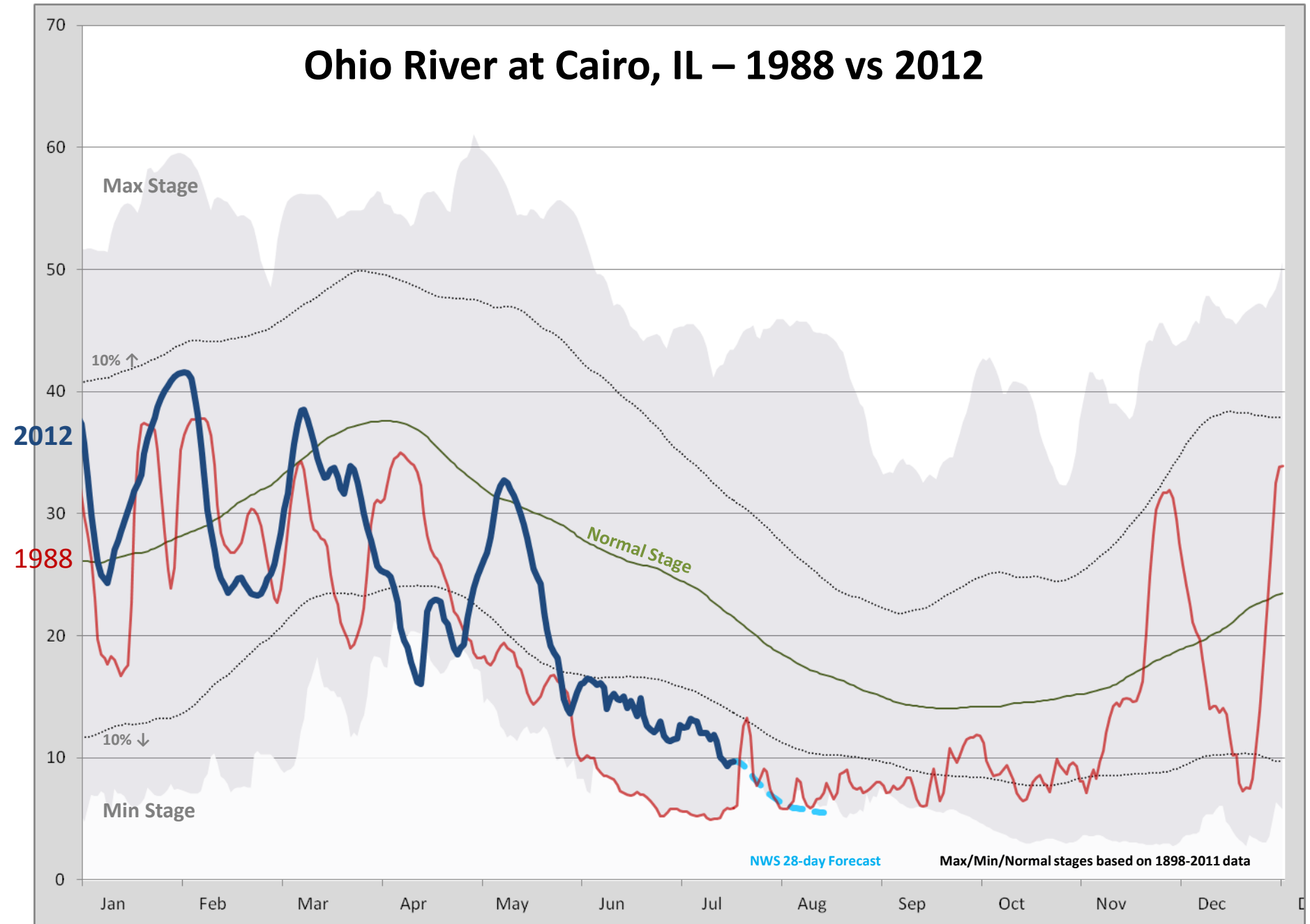


Cairo Monthly Average Flows during 2012





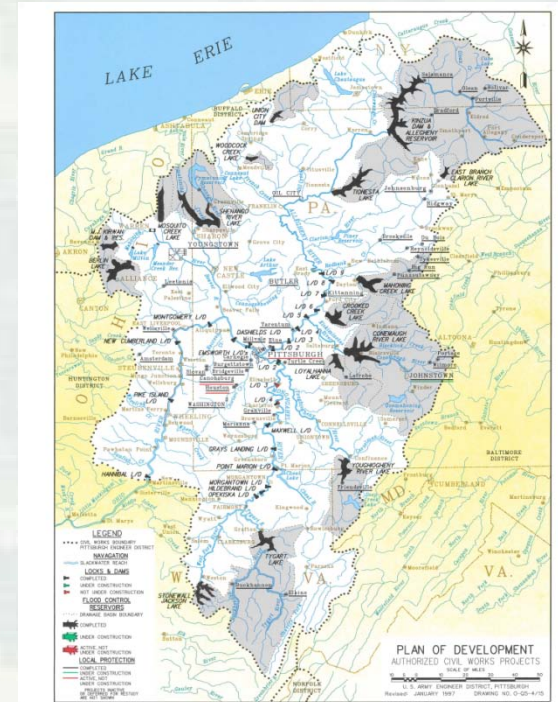
# Ohio River at Cairo, IL – 1988 vs 2012



# Drought Impacts and Actions in Pittsburgh District

(as of 20 July 2012)

- Record or near record low pool levels for July have occurred at 8 of the District's 10 multiple purpose reservoir projects. Current basin conditions are similar to the early 1960s and early 1930s.
- Pittsburgh District Lakes are generally experiencing late summer - early fall water conditions in mid-July. Early closure of some recreational facilities due to low water levels have occurred.
- Major Rivers have averaged 30-50% of normal over most of the last 60 days.
- Since the beginning of June, about 60% of the water passing the Point in Pittsburgh has been from upstream reservoir releases.
- Have increased monitoring and continue to alert local stakeholders. Alert messages have focused on water hazards being closer to the surface, and the increased potential for water quality problems.
- As current trend continues, will increase/expand communication and stakeholder engagement.

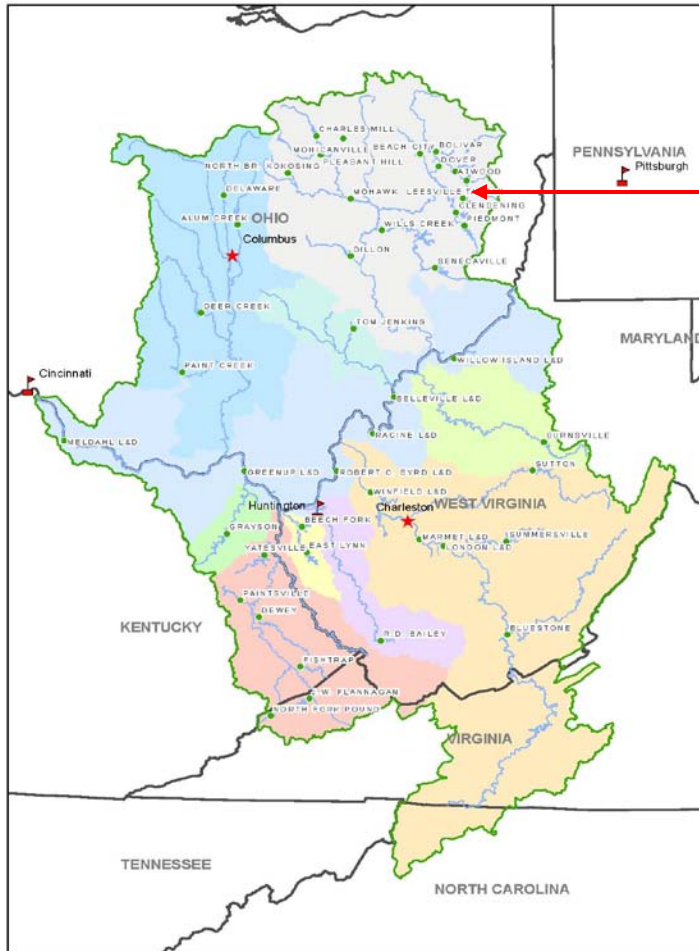


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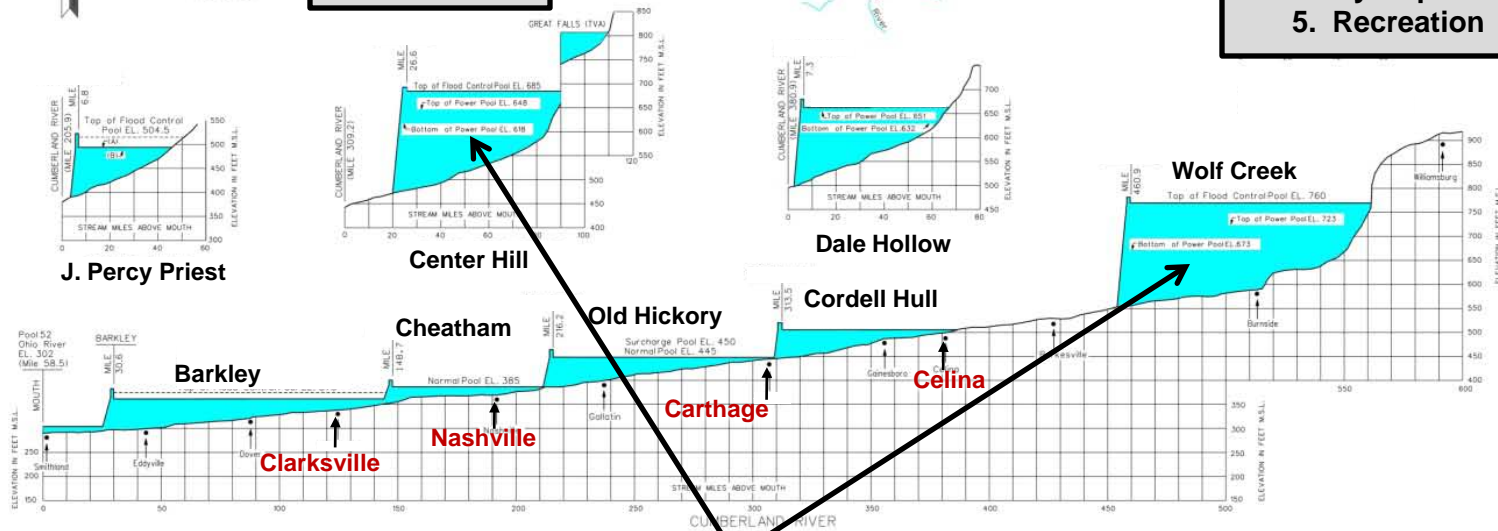
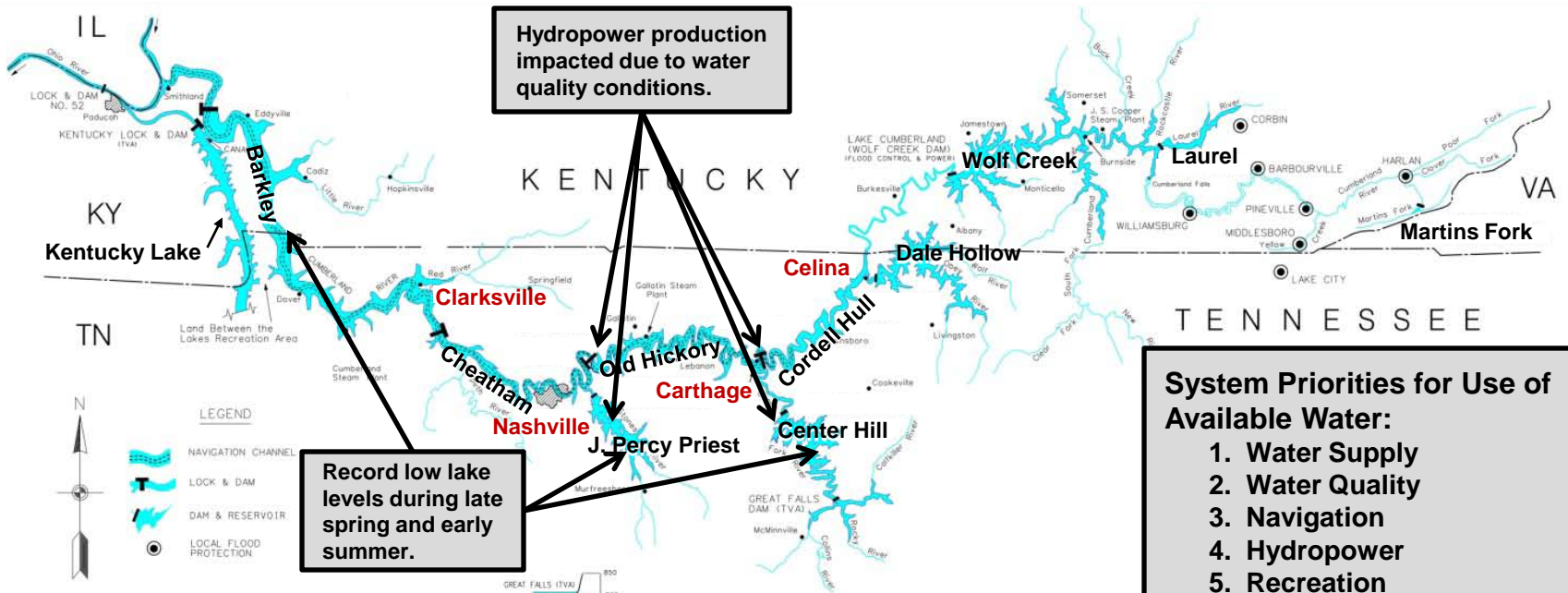


## LRH 2012 Drought Status



- No Significant Impacts
- Muskingum Basin
  - Boat ramp at Leesville Lake in low water
  - Self Regulating Projects below nominal summer pool but within normal operation
- Other Basins
  - 6 lakes below summer pool but no significant impact to recreation or project facilities

# Cumberland River Basin Reservoir System



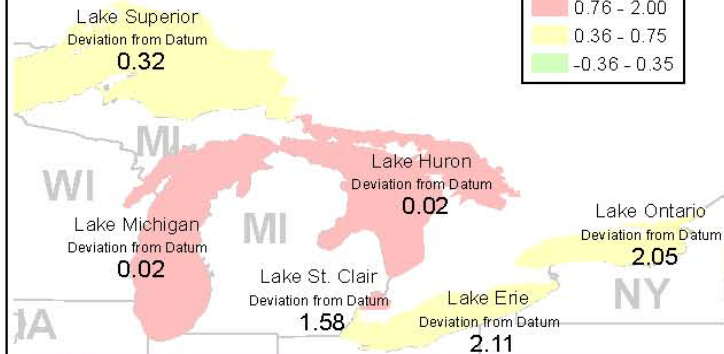
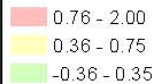
Commercial navigation on the Cumberland River has been maintained without interruption.

Drought operations have been complicated by lake level restrictions at Wolf Creek and Center Hill.



## Great Lakes Status

|Value-LTA|  
feet



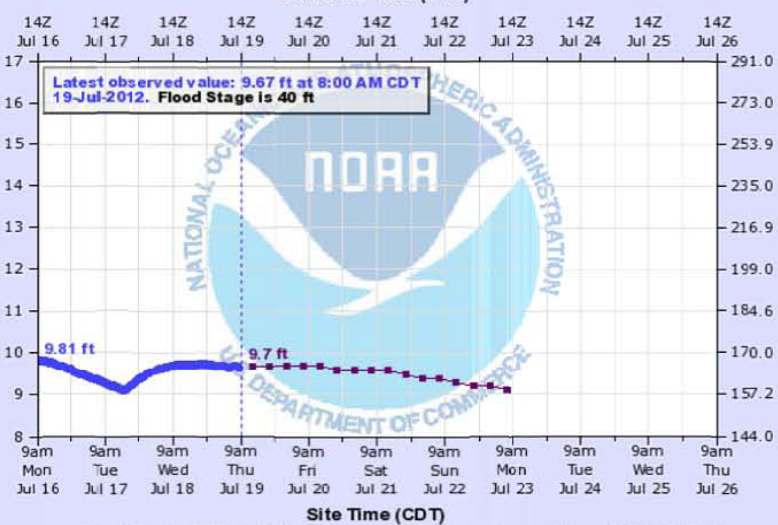
All Great Lakes are below their long term averages. Lake Erie at Buffalo is reporting a record high water temperature. Lake Superior is at the minimum outflow to protect Lake Superior levels.

## Lower Ohio Water Management Strategy

The lower Ohio River at Cairo is presently forecast to fall to the critical navigation stage of 7.5 feet on 28 July and 5.5 feet on 14 August considering no additional rainfall.

## OHIO RIVER AT CAIRO

Universal Time (UTC)



CIRI2(plotting HGIRG) "Gage 0" Datum: 270.9'

## LRD Water Management 19 July 2012

## River, Reservoir and Lake Status

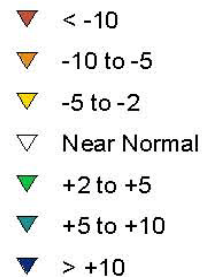
## Reservoir Status

East Branch IRRM  
Lower pool target: 1637.40'  
Current pool: 1641.47'

Wolf Creek--IRRM  
Restricted Pool Elev.: 680.0'  
Current: 683.56'

Center Hill--IRRM  
Restricted Pool Elev.: 630'  
Current: 625.85'

## Departure from Guide Curve (feet)



# Key Navigation Stages – Lower Ohio River

Station	Critical Nav	Current Stage	Change	Forecast Stage 25 July	1988 Minimum	Date
Olmsted Lock and Dam Elev	280.0	283.6	steady	283.4	n/a	n/a
Dam 53 Tailwater, IL	6.9	10.6	steady	10.9	5.30	6/27/1988
Cairo, IL	7.5	9.9	falling	10	4.93	7/12/1988
Barkley Tailwater, KY	302.0	303.4	rising	303	n/a	n/a
Kentucky Tailwater, KY	300.0	302.8	rising	302.4	n/a	n/a



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